

## ABSTRACT OF THE DISCLOSURE

Plasmids encoding anti-HIV and anti-anthrax therapeutic agents are disclosed. Plasmid pWKK-500 encodes a fusion protein containing DP178 as a targeting moiety, the ricin A chain, an HIV protease cleavable linker, and a truncated ricin B chain. N-terminal extensions of the fusion protein include the maltose binding protein and a Factor Xa protease site. C-terminal extensions include a hydrophobic linker, an L domain motif peptide, a KDEL ER retention signal, another Factor Xa protease site, an out-of-frame buforin II coding sequence, the *lacZ* $\alpha$  peptide, and a polyhistidine tag. More than twenty derivatives of plasmid pWKK-500 are described. Plasmids pWKK-700 and pWKK-800 are similar to pWKK-500 wherein the DP178-encoding sequence is substituted by RANTES- and SDF-1-encoding sequences, respectively. Plasmid pWKK-900 is similar to pWKK-500 wherein the HIV protease cleavable linker is substituted by a lethal factor (LF) peptide-cleavable linker. Plasmid pWKK-21 is similar to pWKK-500 wherein the highly truncated ricin B chain is substituted by a one-domain ricin B chain. Oligonucleotide cassettes encoding an HIV protease-cleavable peptide linker and a method of making modified plasmids encoding modified fusion proteins are also described.